AWS-Load-balancer
Launch EC2 Instance (Web Server – 1)
Main Task : **Distributing Traffic Between Two Apache Web Servers Using AWS Application Load Balancer**

Task 1: **Create EC2 Instance**

Logged in to AWS Management Console

Navigated to EC2 → Instances → Launch Instance

Instance Name: web-server-1

AMI: Amazon Linux 2

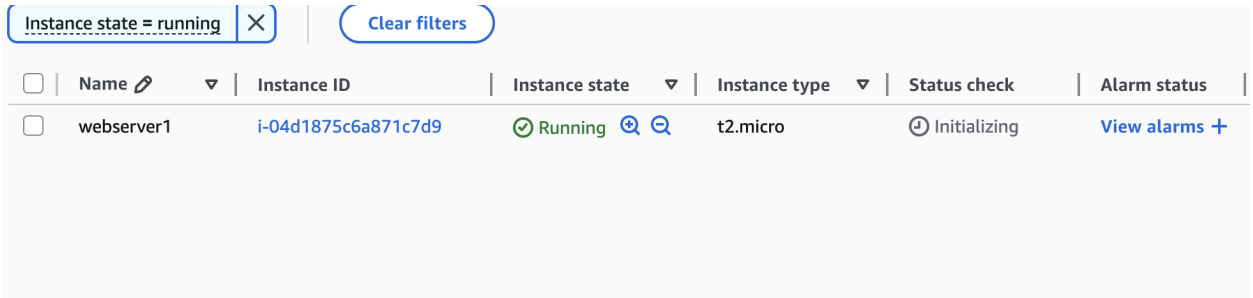
Instance Type: t2.micro

Key Pair: Selected existing key pair

Security Group Configuration

Created a new security group with the following inbound rules:

Type	Protocol	Port	Source	
HTTP	TCP	80	Anywhere (0.0.0.0/0)	(Reason: HTTP access is required for web)
SSH	TCP	22	(default)	



Launch Instance

Task 2: **Launch Second EC2 Instance (Web Server – 2)**

Create EC2 Instance

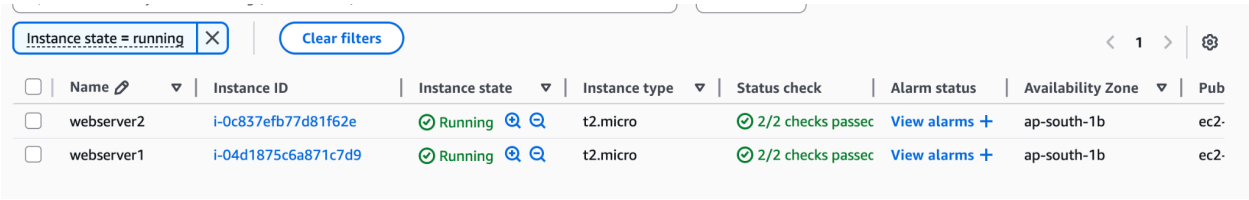
- Navigated to **EC2 → Instances → Launch Instance**
- Instance Name: **web-server-2**
- AMI: **Amazon Linux 2**
- Instance Type: **t2.micro**
- Key Pair: Selected existing key pair

Configure Network Settings

Security Group Configuration

Created a new security group with the following inbound rules:

Type	Protocol	Port	Source
HTTP	TCP	80	Anywhere (0.0.0.0/0) (Reason: HTTP access is required for web)
SSH	TCP	22	(default)



Task 3: **Connecting EC2 Instances to Local Terminal –webserver1**
Steps: terminal
>>Navigate to Downloads Folder
cd ~/Downloads
>>Set Key File Permissions
ls
>>Connect to web-server-1
ssh -i my-key.pem ec2-user@<web-server-1-public-ip>
>>Switch to Root User
Sudo -i

Task 4: To install Apache HTTP Server
sudo yum install httpd -y
>>To start the web server
sudo systemctl start httpd
sudo systemctl enable httpd
>>check the status
systemctl status httpd

```
[root@ip-172-31-13-166 ~]# service httpd start
Redirecting to /bin/systemctl start httpd.service
[root@ip-172-31-13-166 ~]# service httpd status
Redirecting to /bin/systemctl status httpd.service
● httpd.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; preset: disabled)
     Active: active (running) since Mon 2025-12-15 14:12:37 UTC; 13s ago
       Docs: man:httpd.service(8)
   Main PID: 27271 (httpd)
     Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; Bytes served/sec:   0 I
      Tasks: 177 (limit: 1120)
     Memory: 13.0M
        CPU: 70ms
     CGroup: /system.slice/httpd.service
             ├─27271 /usr/sbin/httpd -DFOREGROUND
             ├─27295 /usr/sbin/httpd -DFOREGROUND
             ├─27298 /usr/sbin/httpd -DFOREGROUND
             ├─27299 /usr/sbin/httpd -DFOREGROUND
             └─27300 /usr/sbin/httpd -DFOREGROUND

Dec 15 14:12:37 ip-172-31-13-166.ap-south-1.compute.internal systemd[1]: Starting httpd.service -
Dec 15 14:12:37 ip-172-31-13-166.ap-south-1.compute.internal systemd[1]: Started httpd.service -
```

To exit from this press ctrl+c

>>once exit from this status it will come to ec2 user again change the user to root user
Cmd : sudo -i

Task 5: Create HTML File
>>Navigate to Web Directory
cd /var/www/html
>>Create HTML File
vi index.html
Sample code

```
<!DOCTYPE html>
<html>
<head>
  <title>AWS Load Balancer Demo</title>
  <style>
    body {
      margin: 0;
      font-family: Arial, Helvetica, sans-serif;
      background: linear-gradient(to right, #141e30, #243b55);
      color: white;
      display: flex;
      justify-content: center;
      align-items: center;
      height: 100vh;
    }

    .card {
      background: #1f2a44;
      padding: 30px;
      border-radius: 12px;
      text-align: center;
```

```
        box-shadow: 0 10px 25px rgba(0,0,0,0.4);
        width: 400px;
      }

      h1 {
        margin-bottom: 10px;
        color: #4fd1c5;
      }

      p {
        font-size: 16px;
        margin: 8px 0;
      }

      .server {
        font-size: 18px;
        font-weight: bold;
        color: #f6e05e;
      }
    </style>
</head>
<body>

<div class="card">
    <h1>AWS Load Balancer</h1>
    <p>Web Application is Running Successfully 🚀</p>
    <p class="server">Server Name: WEB-SERVER-1</p>
    <p>Application Load Balancer Demo</p>
</div>

</body>
</html>
```

>>Exit Editor
:q!
>> restart the service
service httpd restart

```
[ec2-user@ip-172-31-13-166 html]$ sudo -i
[root@ip-172-31-13-166 ~]# cd /var/www/html
[root@ip-172-31-13-166 html]# vim index.html
[root@ip-172-31-13-166 html]# service httpd restart
Redirecting to /bin/systemctl restart httpd.service
```

>>go to chrome copy the public ip address and add http port
Ex: 13.203.75.16:80
Olp :web page

Task 6: **Connecting EC2 Instances to Local Terminal –webserver2**

>>repeat the same steps which we did in webserver1
>>Switched to root user.
>>Installed Apache web server.
sudo yum install httpd -y
>>Started and enabled Apache service.
sudo systemctl start httpd
sudo systemctl enable httpd
>>Verified Apache service status.
systemctl status httpd

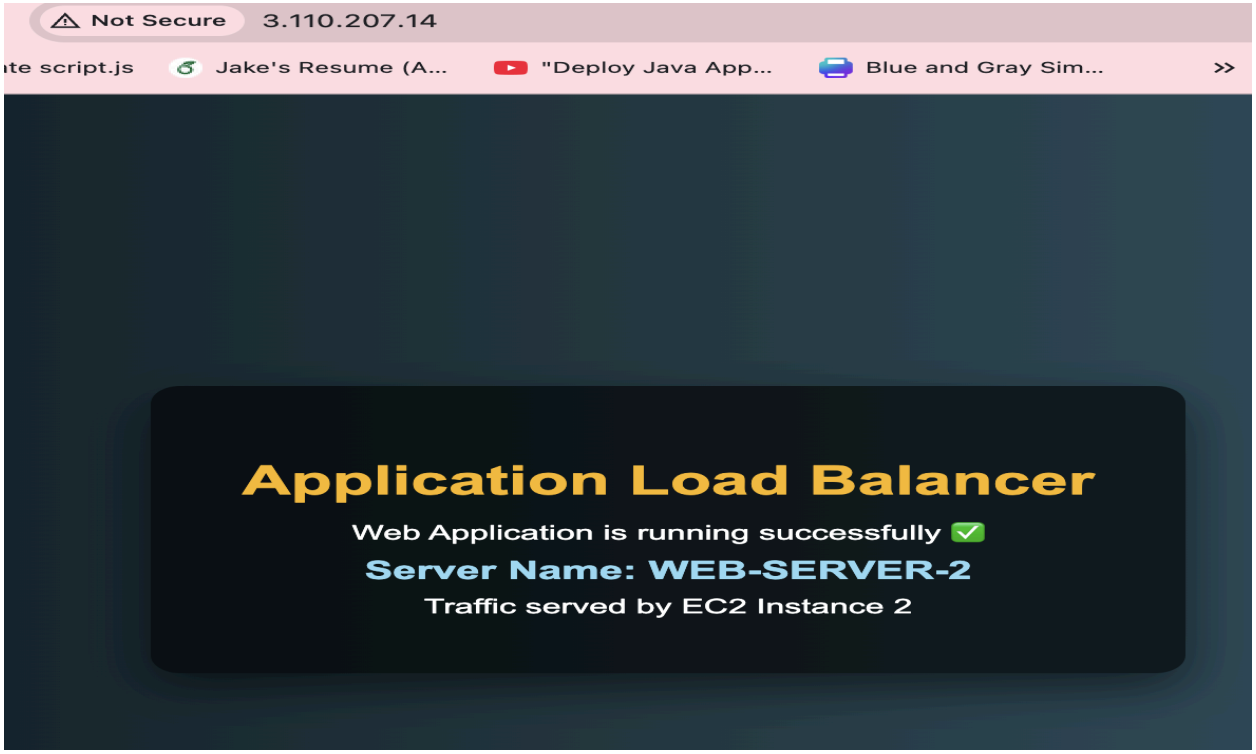
Task 7: Created an HTML file.
cd /var/www/html
vi index.html

Sample code for web server -2

```
<!DOCTYPE html>
<html>
<head>
    <title>AWS Load Balancer - Server 2</title>
    <style>
        body {
            margin: 0;
            font-family: Arial, sans-serif;
```

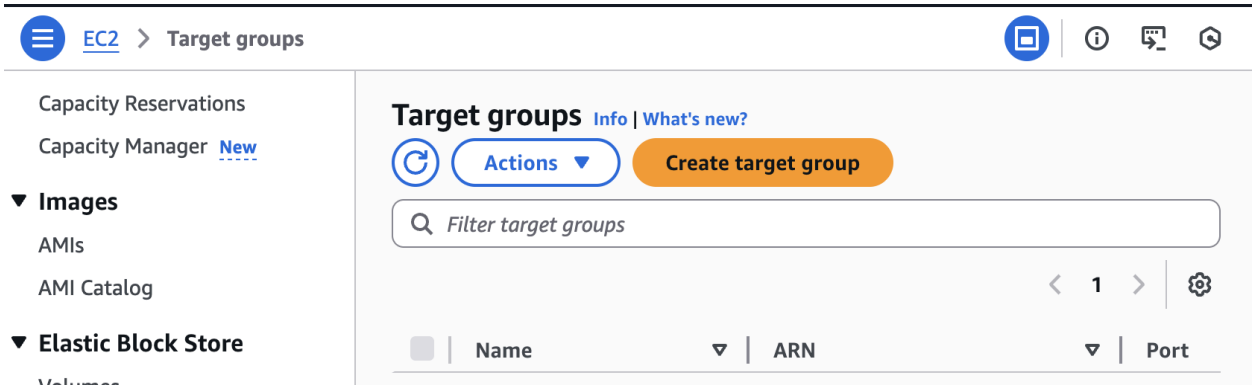
```
            background: linear-gradient(to right, #0f2027, #203a43, #2c5364);
            color: #ffffff;
            display: flex;
            justify-content: center;
            align-items: center;
            height: 100vh;
        }

        .box {
            background: rgba(0, 0, 0, 0.6);
            padding: 35px;
            border-radius: 14px;
            text-align: center;
            box-shadow: 0 12px 30px rgba(0,0,0,0.5);
            width: 420px;
        }

        h1 {
            color: #ffb703;
            margin-bottom: 12px;
        }

        p {
            font-size: 16px;
            margin: 8px 0;
        }

        .server {
            font-size: 20px;
            font-weight: bold;
            color: #90dbf4;
        }
    </style>
</head>
<body>
<div class="box">
    <h1>Application Load Balancer</h1>
    <p>Web Application is running successfully ✅</p>
    <p class="server">Server Name: WEB-SERVER-2</p>
    <p>Traffic served by EC2 Instance 2</p>
</div>

</body>
</html>
```

>>Exit Editor
:q!
>>go to chrome copy the public ip address and add http port
Ex: 3.110.207.14:80
Olp :web page



Info : In real time, we don't share server IP addresses because it is not safe.
use a load balancer to share traffic between servers so the application works fast

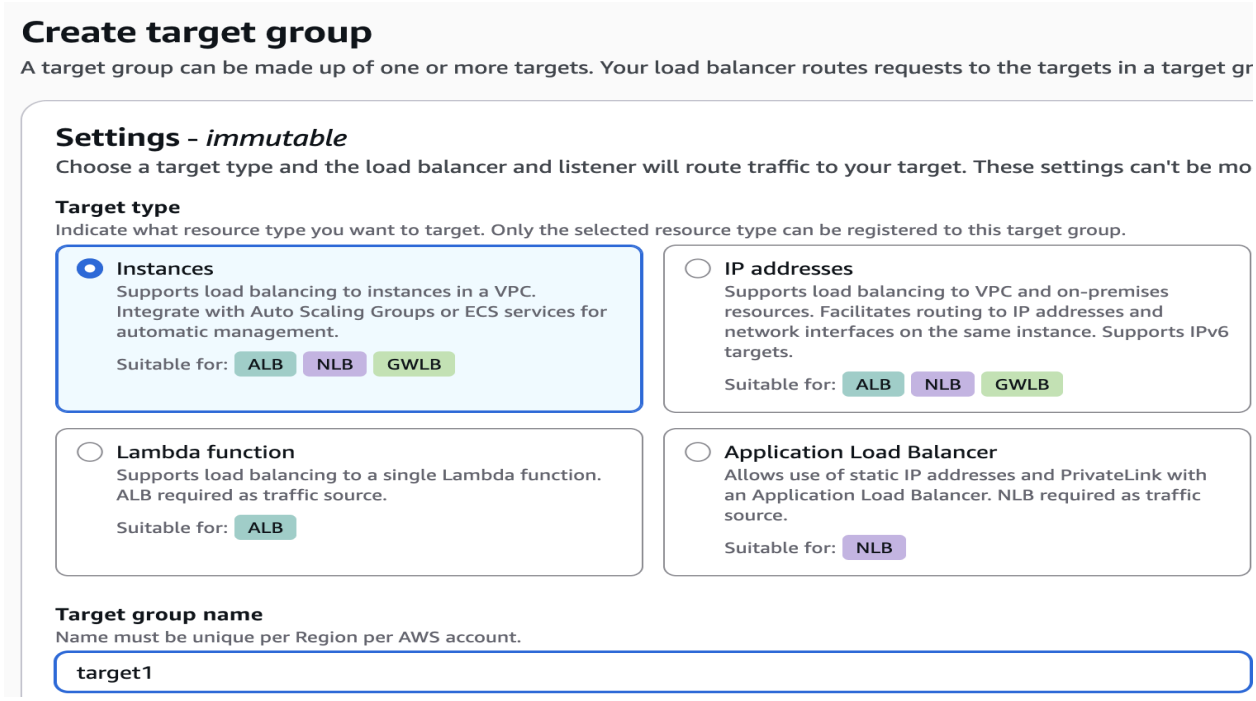
Task 8:**Create Target group**
Info : A target group connects the load balancer to the web servers so traffic goes to the right servers**.**
Process: Go to EC2 → Target Groups.



>> configure the Target group

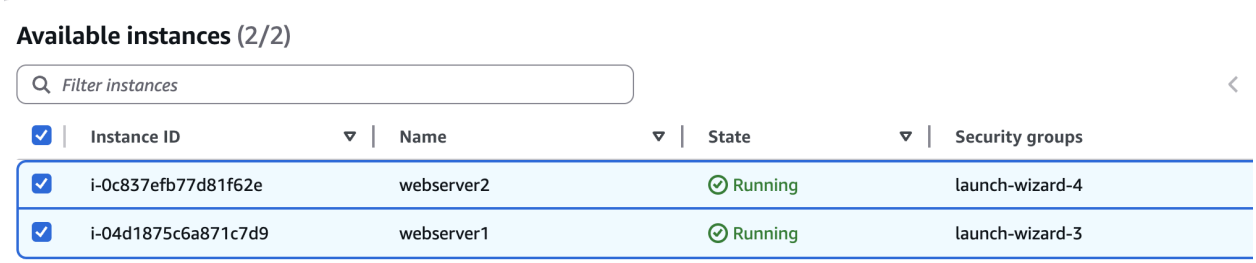
Enter the target name: target 1

Target type : instances

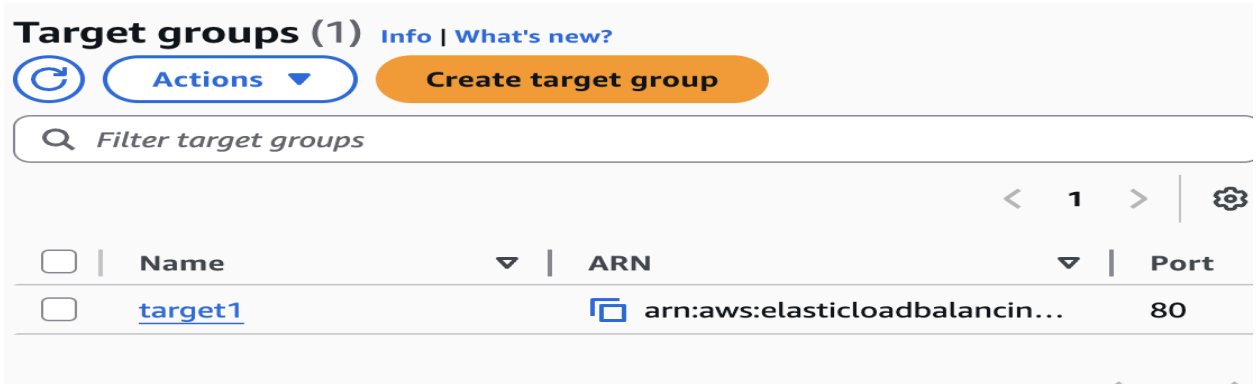


Next keep every thing by default click on **Next**

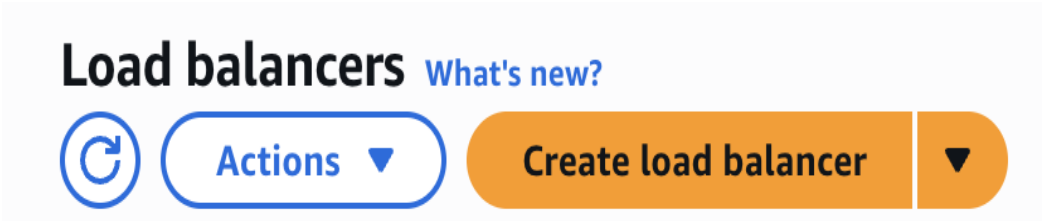
>>select the instances for target group



>>click on create a target group



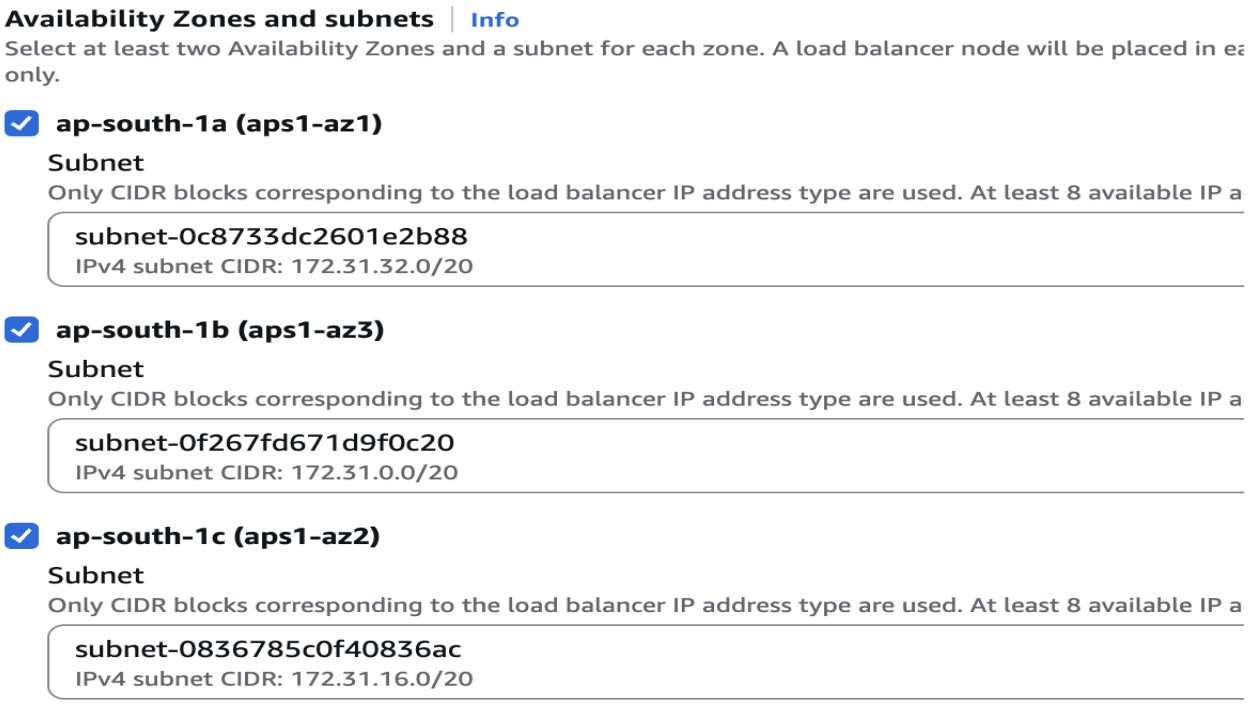
Task 8:**Create Load balancer**



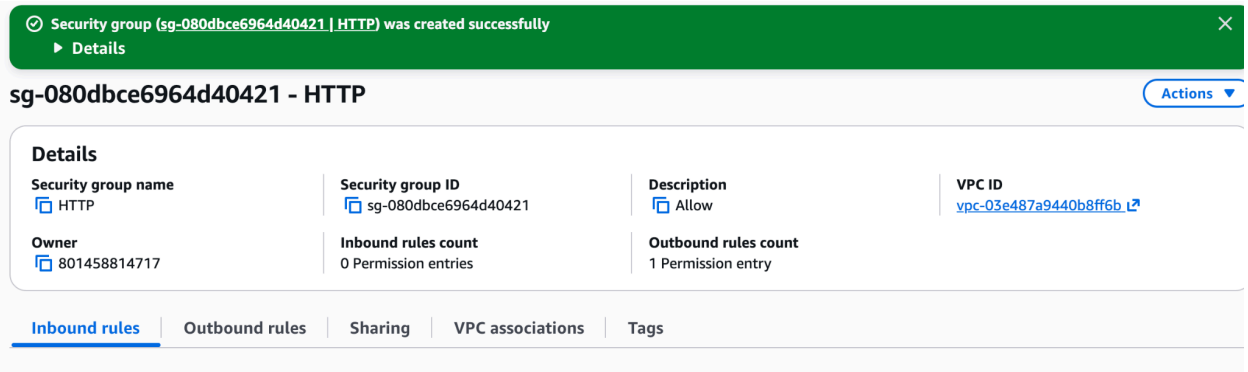
>>Select: Application load balancer

>> configure the Application load balancer
Load balancer name : applicationloadbalancer

>> Need to select atleast two availability zones to enroute the load balancer traffic



>>create security group. I created security group name it has HTTP - IPV4



>

EC2 > Load balancers > Create Application Load Balancer

Subnet

Only CIDR blocks corresponding to the load balancer IP address type are used. At least 8 available IP addresses are required for your load balancer to scale e

subnet-0f267fd671d9f0c20
IPv4 subnet CIDR: 172.31.0.0/20

☑ **ap-south-1c (aps1-az2)**

Subnet

Only CIDR blocks corresponding to the load balancer IP address type are used. At least 8 available IP addresses are required for your load balancer to scale e

subnet-0836785c0f40836ac
IPv4 subnet CIDR: 172.31.16.0/20

Security groups Info

A security group is a set of firewall rules that control the traffic to your load balancer. Select an existing security group, or you can create a

Security groups

Select up to 5 security groups

default
sg-05dab4643acba95c0 VPC: vpc-03e487a9440b8ff6b

HTTP
sg-080dbce6964d40421 VPC: vpc-03e487a9440b8ff6b

>> Check the HTTP PORT and select the Target group

▼ Listener **HTTP:80**

Protocol: HTTP

Port: 80
1-65535

Default action Info
The default action is used if no other rules apply. Choose the default action for traffic on this listener.

Routing action

◉ Forward to target groups ○ Redirect to URL ○ Return fixed response

Forward to target group Info
Choose a target group and specify routing weight or create target group.

Target group: target1 HTTP
Target type: Instance, IPv4 | Target stickiness: Off

Weight: 1
0-999

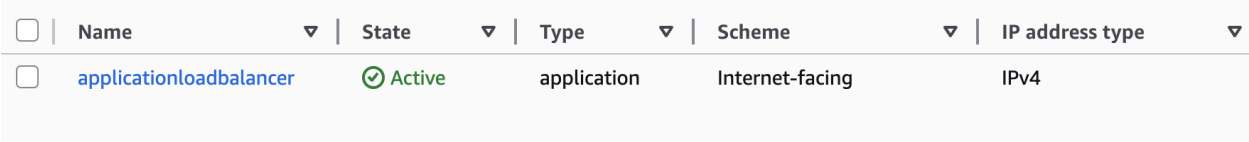
Percent: 100%

>> remaining leave every thing by default and create load balancer

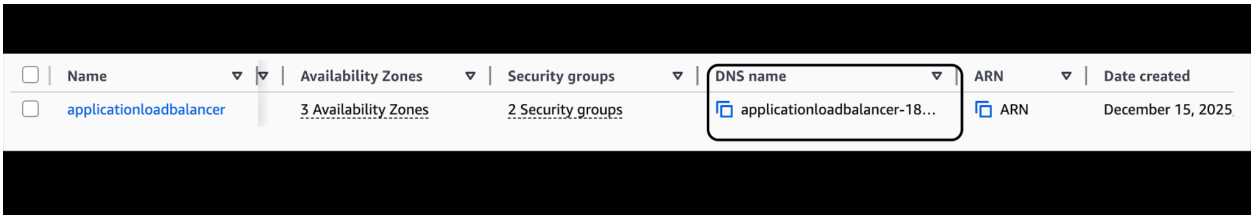
[redacted]

Name	IP address type	VPC ID	Availability Zones	Security groups
applicationloadbalancer	IPv4	vpc-03e487a9440b8ff6b	3 Availability Zones	2 Security groups

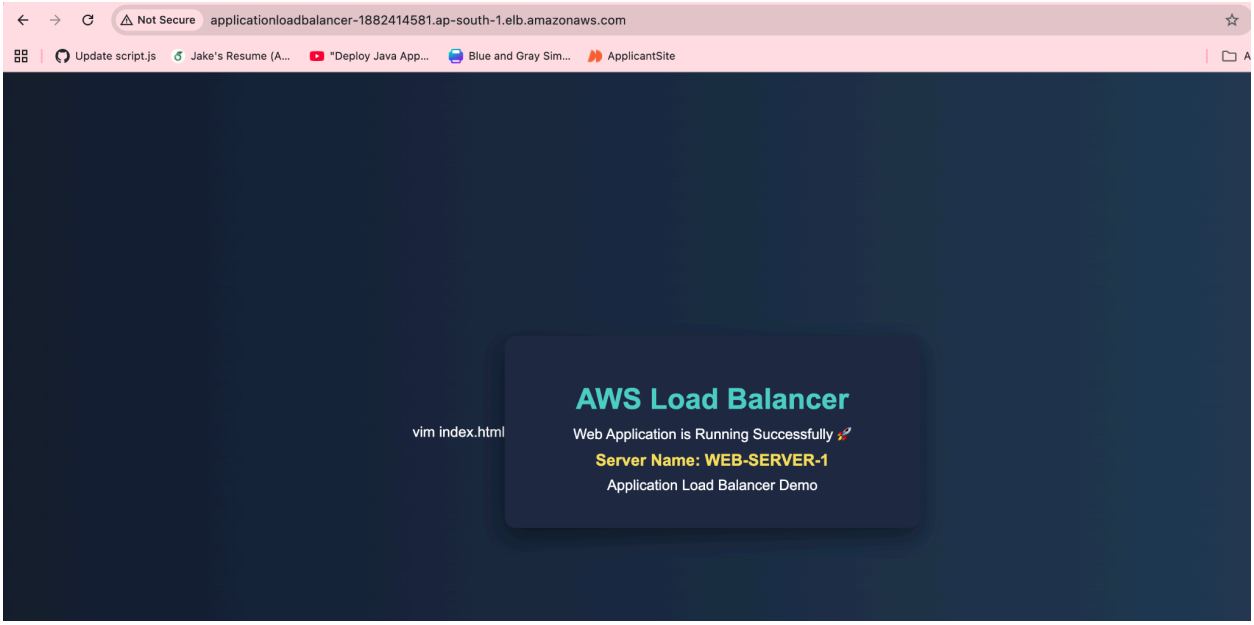
INFO : 3 availability zone –load balancer it will distribute the traffic in three availability zone instances
If the load state is in provisioning wait for few minutes them it will be in active



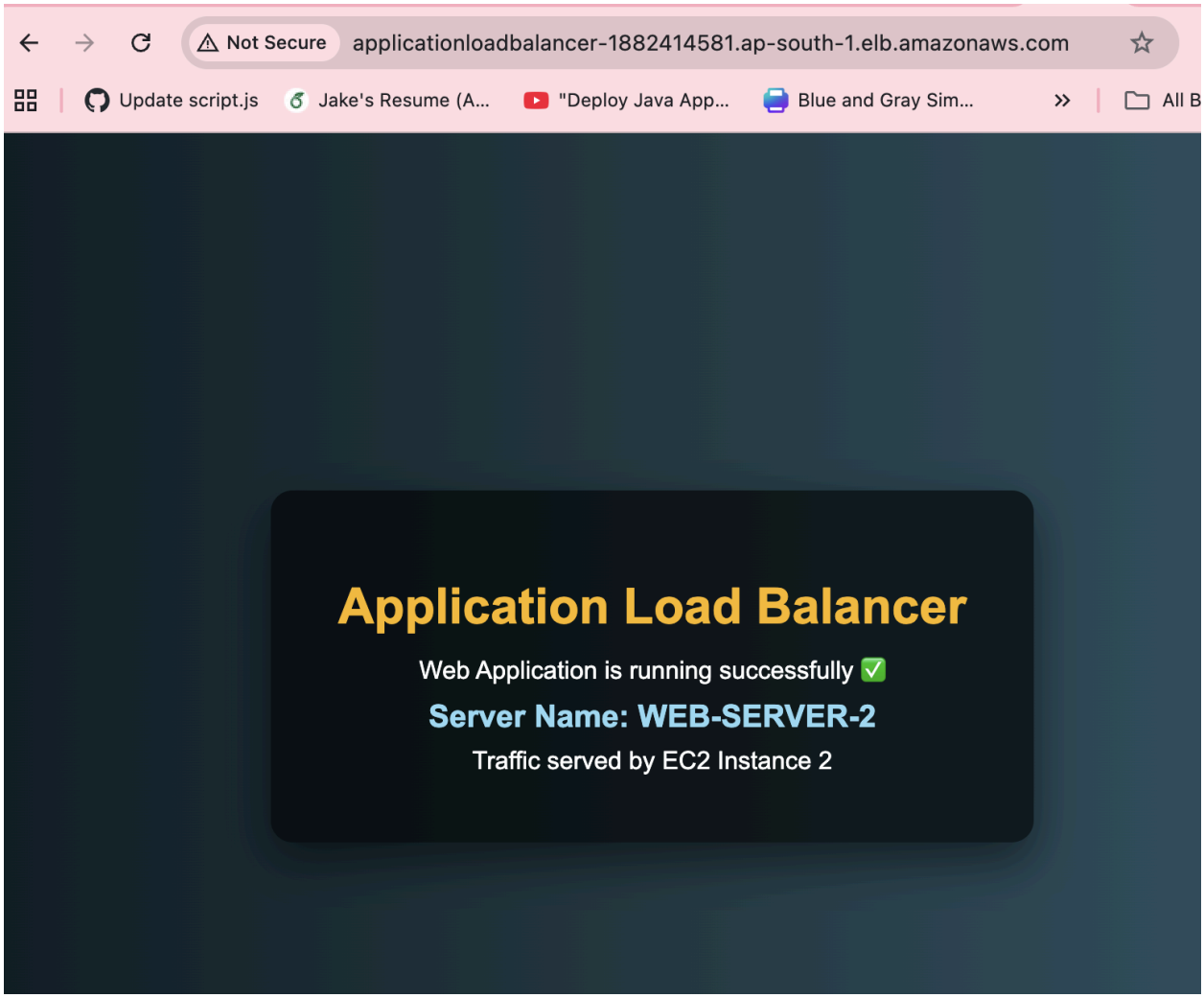
>To access the application no need to use the ip address use the DNS name for the safe and secure we can also send DNS name to the users (we are not using the ip address we only using the DNS name)



>> copy the DNS name paste it in chrome webserver-1 page will come



>> if we refresh the page webserver-2 page will come



>>INFO → traffic is distributing the by using the traffic group in load balancer. We can run multiple servers in traffic group. So it will distribute the traffic. When we send any request our target group will immediately take the action any server can give response to the user (like which ever server having low load the traffic group will send the request to that server)